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The Auditory Discrimination in Depth (A.D.D.) Program suggests that there is a direct relationship between auditory discrimination or auditory perceptual ability and the development of competency in language and literacy skills. (Auditory perceptual ability is defined as the ability to discriminate individual phonemes and to track their changing temporal relationships as oral patterns vary.) Individuals with sub-standard language and literacy skills can often discriminate test pairs correctly as to sameness and difference, but cannot indicate how or where the patterns are different. The A.D.D. Program has proved "effective in developing the ability to conceptualize auditory patterns in detail." This program, developed in remediation of language and/or literacy problems for both children and adults, provides for a grasp of the interrelationships between speech, writing, and reading, and establishes a circular auditory-visual-vocal check system which allows each skill to support and reinforce the others. One feature of the program is the use of labeling and syntactical mediation to establish awareness of auditory, visual, and kinesthetic relationships among the phonemes of English. (The author's detailed description of this program, "The A.D.D. Program, Auditory Discrimination in Depth," May 1969, is published by Teaching Resources, 100 Boylston Street, Boston, Mass. 02167.) (AMM)

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# FACILITATION OF LANGUAGE AND LITERACY DEVELOPMENT THROUGH INTENSIVE AUDITORY PERCEPTUAL TRAINING

The A.D.D. Program - Auditory Discrimination in Depth[1] - suggests that there is a direct relationship between auditory discrimination or auditory perceptual ability and the development of competency in language and literacy skills. Auditory perceptual ability is defined as the ability to discriminate individual phonemes and to track their changing temporal relationsihps as oral patterns vary. If the monitoring function of the ear is developed in depth in relation to discriminating oral patterns, its function can then be readily extended to encoding and decoding of phoneme-grapheme correspondence for spelling and reading activities. These activities can then in turn further reinforce oral patterns.

Tests commonly used to measure auditory discrimination involve judging sameness or difference of syllable or word pairs. Although same/different judgment is certainly basic, more extensive judgments than this need to be made. Empirically we have found that individuals with sub-standard language and literacy skills can often discriminate test pairs correctly as to sameness and difference, but cannot indicate how or where the patterns are different. This inability to perceive the nature of the contrasts and shifts as syllable patterns vary would appear to be a crucial factor. It can have a negative bearing on the individual's performance with oral patterns and even more directly can affect his grasp of the logic of the graphic system used to represent those oral patterns. This factor can be operant whether the individual is a native speaker of English or a speaker of English as a second language.

We suggest that priority should be given to establishing this ability to conceptualize auditory patterns in detail. We offer the program to be described in this paper as a method which has proved to be effective in developing this ability in both clinical and classroom situations. The program was developed in remediation of language and/or literacy problems for both children and adults. It provides for a grasp of the inter-relationships between speech, writing, and reading and establishes a circular auditory-visual-vocal check system which allows each skill to support and reinforce the others. One feature of the program is the use of labeling and syntactical mediation[2] to establish awareness of auditory, visual, and kinesthetic relationships among the phonemes of English. The relevancy of this is indicated by Strauss and Kephart[3] when they point out that although sensory experience precedes perception, isolated sensory data are rarely effective, as perception grows out of the organizations and relationships rather than out of the sense data themselves.

The Program moves through three levels: the gross level, the aural-oral level, and the sound-symbol level. Gross listening activities are engaged in to establish the concept of the ear as a monitor in various life situations and to gain appreciation for the variety of situations the ear judges and verifies for us. This then leads naturally to the concept that the monitoring function of the ear needs to extend into yet another area - that of speech sounds and letters and words and how we say them and write them and read them, and that this is one of the most exciting and important areas in which our ears can work for us.

The oral-aural level concerns itself first with identification of the phonemes* of English. The eight unvoiced-voiced consonant pairs are presented in the following manner: it is suggested that there are several pairs of sounds in our language that we could think of as brothers, because like brothers there is something alike and yet

* The phonemic symbols used in this paper are those used in the A.D.D. Program.

something different about the two sounds in each pair. Students are set the task of discovering these pairs. They are given the unvoiced or "quiet" sound in each pair and are led by the teacher's questions to use auditory, visual, and kinesthetic cues in establishing a label for that sound. The label in turn aids in identifying the other sound in each pair. Alternate labels are offered for older students and adults, but the labels suggested for younger students are:

/ p b / lip poppers

/ t d / tip tappers

/ k g / scrapers

/ f v / lip coolers

/ th th / tongue coolers

It will be recognized that the first five labels are related to the place and manner of articulation.[4] The next three labels are associated with the contrasting quality of the air stream for these three pairs.

/ s z / skinny

/ sh zh / fat

/ ch j / fat pushed

The rest of the consonants are grouped and labeled as follows:

/ w h wh / windy sounds

/ m n ng / nosy sounds

/ l r / lifters - one lifts in the front and one lifts in the back

In these groups, students are given the labels and one sound from each grouping and are led to discover the others. At the instructor's discretion, the consonant groupings and labels may be established at the aural-oral level first, or symbols may be presented concurrently. One last group, labeled as the borrowers - c, x,

qu, y - is not introduced until symbols are being used, for obvious reasons. After students have worked through the act of labeling and verifying for themselves the what and how and why of these groupings, the acquisition of corresponding sound-symbol associations appears to be greatly facilitated.

The vowel phonemes are presented next in a modification of the basic vowel circle, and at first colored squares are used to plot them on the circle. Although slight changes have been made in the sequence of vowels on the circle, the over-all relationship is not disturbed. The consequent juxtaposition of phonemes and symbol forms has been found to facilitate phoneme discriminations and symbol associations. Key words can be agreed upon for each phoneme for aid in recall, and syntactical mediation such as the following has been found to aid the perception of the vowel units:

> The vowels on the circle start with the tongue
> high upstairs in the front of the mouth. Then
> in six little steps it is down on the main floor.
>
> / ee i e ae a ụ /
>
> then there are two steps down the basement
>
> / o au,aw /
>
> and three steps up the back stairs.
>
> / oe, ʊʊ ʊo /
>
> Four vowels are placed outside the circle,
>
> / ie ue oi,oy ou,ow /
>
> and the explanation is given that they are not on the circle because they would be hard to place since they slide from one position to another. The identity of each vowel in contrast to other vowels seems to come through strongly as they are experienced in this circle relationship; then when symbols are introduced the association to their respective vowel sounds is quite readily accomplished. Either traditional or ITA symbols can be used with this program.

As the identity of the consonant and vowel phonemes becomes established, the A.D.D. Program moves into perhaps its most vital feature - the colored block encoding of varying patterns of phoneme occurrence. No constant color for phoneme code is used here except to denote a repetition of a phoneme within a given pattern. The three categories used are the same as those of the A.D.D. Test.

To quickly review:

Category I involves encoding sequences of isolated phonemes as to the pattern of their sameness and difference:

If this (red) says /k/, show me /k/ /k/.

(red) (red)

(student response)

Show me /m/ /m/ /m/

(green) (green) (green)

(student response)

Show me /s/ /d/

(orange) (blue)

(student response)

And so on through all the possible combinations in a three phoneme unit, and on into four and five if desired. If errors occur, the student is cued to track the identity of the phonemes involved through the use of the labels established earlier.

Category II involves encoding shifts in consonant-vowel relationships at the simple syllable level:

If this (blue) says /b/ and this (red) says /a/, show me /ab/.

(red) (blue) (student response)

Now show me /ba/.

(blue) (red) (student response)

Now show me /bab/.

(blue) (red) (blue) (student response)

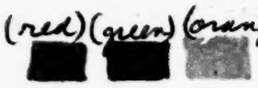
This time the patterns are retained so the contrasts can be seen.

Category III involves encoding modifications of a basic syllable as phonemes are added, substituted, deleted, repeated, and shifted. The student is led to track small progressions such as:

Show me /ag/.

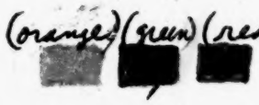
(student response)

If that says /ag/, make it say /mag/.



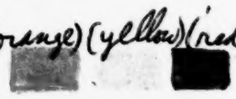
(student response)

If that says /mag/, make it say /gam/.



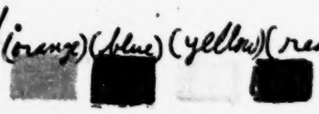
(student response)

If that says /gam/, make it say /gom/.



(student response)

If that says /gom/, make it say /glom/.



(student response)

And so on and so forth. We believe that the same positive relationship that exists between visual perception and motor experience also exists between auditory perception and motor experience, and that the motor experience of shifting the colored block pattern as the auditory pattern shifts makes the relationship of the shifts and contrasts more vivid and concrete.

Once the circular relationships of the auditory, visual, and kinesthetic modalities is functioning to verify contrasts in oral patterns, it is relatively simple to extend this verification to the third level of the A.D.D. Program - the sound-symbol level. Here again the motor modality is involved, and small progressions in oral patterns are encoded by placement and manipulation of graphic symbols on cards or tiles. Again nonsense syllables are used, but as the student's skill increases he usually spontaneously makes the transition to encoding real words. He experiments again and again and finds he can turn a given syllable into many different

words. Discovering for himself how words are generated is of tremendous importance -- it forms the basis for associations and interconnections which will make for unusual facility with our language, both in its spoken and in its written form.

The student should also have decoding experiences where the ear must verify that the mouth produced a pattern corresponding to what the eye saw. Again, work begins with nonsense syllables, and then generalization is made to words. As the reading-for-meaning task is introduced, the student's ear continues in its synthesizing function in the reading of sentences and the comprehension of what they say.

Pilot research was done with the A.D.D. Program in an eighth grade classroom grouped for low ability. Many of the students were bi-lingual or bi-dialectical. Individual gains in reading level ran as high as seven years in four months' time, with an average gain of 2.5 years on a timed basis and 3.9 years on an untimed basis. In a first grade class with many bi-lingual and bi-dialectical children, sound-symbol associations had proved to be a difficult task. Mid-year testing showed zero ability for all students on a 15-word spelling test containing regular words such as man, pen, fish, etc. After a four month application of the A.D.D. Program a retest showed students generalizing to the 15-word spelling task. Scores now ranged from zero to 100%, with an average score of five words correct.

The program just described does not compete with existing speech-language, reading, and spelling programs. Rather, it develops a base of auditory perceptual judgment from which students can relate to these other programs more effectively.

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